1 :

RTT

2 :

RTT **03** **100** **J** **TP**

01(0201) 02(0402) 03(0603) 05(0805) 06(1206) 12(1210) 20(2010) 25(2512)

3-	E24 EX. 10Ω =100 4.7Ω =4R7
4-	E96 EX. 10.2Ω =10R2 10KΩ =1002
JUMPER	000

B=± 0.1% D=± 0.5% F=± 1% G=± 2% J=± 5%

TH:2 mm Pitch ( ) 10000 pcs TP:4 mm Pitch ( ) 5000 pcs P2:4 mm Pitch ( ) 10000 pcs P3:4 mm Pitch ( ) 15000 pcs P4:4 mm Pitch ( ) 20000 pcs TE:4 mm Pitch ( ) 4000 pcs BA: ( )

3 :

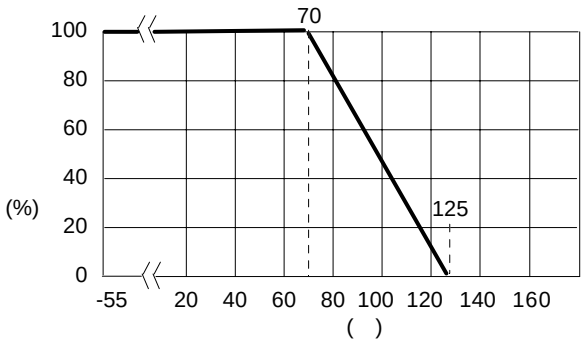
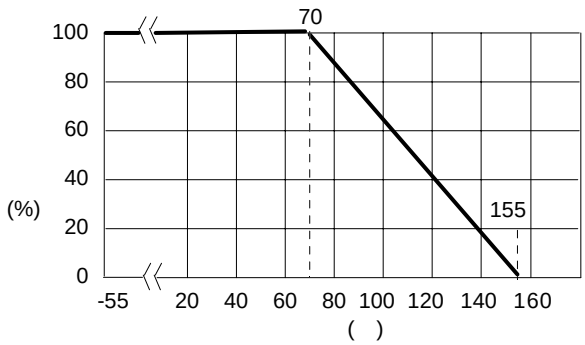
3.1 : 1Ω

				T.C.R (ppm/)					JUMPER (0Ω)		JUMPER (0Ω)	
					B(± 0.1%) E-24 E-96	D(± 0.5%) E-24 E-96	F(± 1%) E-24 E-96	**G(± 2%)** J(± 5%) E-24	J (± 5%)	F (± 1%)	J (± 5%)	F (± 1%)
RTT01 (0201)	1/20 w	25V	50V	± 600	------	1Ω R 25Ω	1Ω R 25Ω	1Ω R 25Ω	0.5A	0.5A	50mΩ MAX.	35mΩ MAX.
				± 250	------	25Ω R 10MΩ	25Ω R 10MΩ	25Ω R 10MΩ				
RTT02 (0402)	1/16 w	50V	100V	± 100	100Ω R 1MΩ	100Ω R 1MΩ	100Ω R 1MΩ	100Ω R 1MΩ	1A	1.5A	50mΩ MAX.	20mΩ MAX.
				± 200	------	10Ω R 100Ω	10Ω R 100Ω 1M R 10MΩ	10Ω R 100Ω 1M R 20MΩ				
				+500 -200	------	------	1Ω R 10Ω	1Ω R 10Ω				
RTT03 (0603)	1/10 w	75V	150V	± 100	100Ω R 1MΩ	100Ω R 1MΩ	33Ω R 1MΩ	------	1A	2A	50mΩ MAX.	20mΩ MAX.
				± 200	------	1Ω R 100Ω	1Ω R 33Ω 1M R 10MΩ	1Ω R 20MΩ				
RTT05 (0805)	1/8 w	150V	300V	± 100	100Ω R 1MΩ	100Ω R 1MΩ	33Ω R 1MΩ	------	2A	2.5A	50mΩ MAX.	20mΩ MAX.
				± 200	------	1Ω R 100Ω	1Ω R 33Ω 1M R 10MΩ	1Ω R 20MΩ				
RTT06 (1206)	1/4 w	200V	400V	± 100	100Ω R 1MΩ	100Ω R 1MΩ	33Ω R 1MΩ	------	2A	3.5A	50mΩ MAX.	20mΩ MAX.
				± 200	------	1Ω R 100Ω	1Ω R 33Ω 1M R 10MΩ	1Ω R 20MΩ				
RTT12 (1210)	1/2 w	200V	400V	± 100	100Ω R 1MΩ	33Ω R 1MΩ	33Ω R 1MΩ	------	2A	4A	50mΩ MAX.	20mΩ MAX.
				± 200	------	------	10Ω R 33Ω 1M R 10MΩ	10Ω R 20MΩ				
				± 400	------	------	1Ω R 10Ω	1Ω R 10Ω				
RTT20 (2010)	3/4 w	200V	400V	± 100	100Ω R 1MΩ	33Ω R 1MΩ	10Ω R 1MΩ	------	2A	5A	50mΩ MAX.	20mΩ MAX.
				± 200	------	------	------	10Ω R 10MΩ				
				± 400	------	------	1Ω R 10Ω	1Ω R 10Ω				
RTT25 (2512)	1 W	200V	400V	± 100	100Ω R 1MΩ	33Ω R 1MΩ	10Ω R 1MΩ	------	2A	7A	50mΩ MAX.	20mΩ MAX.
				± 200	------	------	------	10Ω R 10MΩ				
				± 400	------	------	1Ω R 10Ω	1Ω R 10Ω				
				55 ~ 155 (0201: 55 ~ 125)								

3.2 : 1Ω

				T.C.R (ppm /)	F(± 1%) G(± 2%) J((± 5%) E-24 E-96
RTT02 (0402)	1/16W	0.88A	2.2A	± 600	80 R 200 mΩ
				± 300	200 R 400 mΩ
				± 250	400 R 600 mΩ
				± 200	600 R 1000 mΩ
RTT03 (0603)	1/10W	1.29A	3.22A	± 600	60 R 100 mΩ
				± 300	100 R 200 mΩ
				± 600	200 R 500 mΩ
				± 400	500 R 1000 mΩ
RTT05 (0805)	1/8W	3.53A	8.82A	± 1500	10 R 19 mΩ
				± 1200	19 R 33 mΩ
				± 800	33 R 50 mΩ
				± 600	50 R 100 mΩ
				± 200	100 R 1000 mΩ
RTT06 (1206)	1/3W	5.77A	14.42A	± 1500	10 R 19 mΩ
				± 1200	19 R 25 mΩ
				± 1000	25 R 50 mΩ
				± 600	50 R 100 mΩ
				± 200	100 R 1000 mΩ
RTT12 (1210)	1/2W	7.07A	17.67A	± 1500	10 R 19 mΩ
				± 1000	19 R 25 mΩ
				± 700	25 R 50 mΩ
				± 400	50 R 100 mΩ
				± 200	100 R 1000 mΩ
RTT20 (2010)	3/4W	8.66A	21.65A	± 1500	10 R 19 mΩ
				± 1200	19 R 25 mΩ
				± 900	25 R 50 mΩ
				± 500	50 R 100 mΩ
				± 200	100 R 1000 mΩ
RTT25 (2512)	1 W	10A	25A	± 1500	10 R 19 mΩ
				± 1200	19 R 25 mΩ
				± 900	25 R 50 mΩ
				± 500	50 R 100 mΩ
				± 200	100 R 1000 mΩ
					55 ~ 155

3.3 :

	RTT01 (0201)	
	55 ~ 125	**55 ~ 155**
	70 125	70 155
		

3.4 :

3.4.1 : 1Ω

: (rms.)

$$E = \sqrt{R \times P}$$

E= (V)
P= (W)
R= (Ω)

3.4.2 : 1Ω

: (rms.)

$$I = \sqrt{P/R}$$

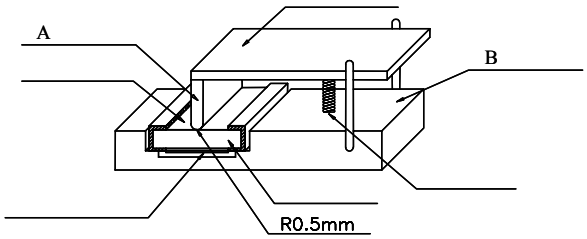
I = (A)
P= (W)
R= (Ω)

4 :

TYPE / Dimension	Size Code	L	W	H	L1	L2
RTT01	**0201**	0.60± 0.03	0.30± 0.03	0.23± 0.03	0.15± 0.05	0.15± 0.05
RTT02	**0402**	1.00± 0.10	0.50± 0.05	0.30± 0.05	0.20± 0.10	0.25± 0.10
RTT03	**0603**	1.60± 0.10	0.80± 0.10	0.45± 0.10	0.30± 0.15	0.30± 0.15
RTT05	**0805**	2.00± 0.10	1.25± 0.10	0.50± 0.10	0.35± 0.20	0.35± 0.15
RTT06	**1206**	3.05± 0.10	1.55± 0.10	0.55 +0.10 -0.05	0.45± 0.20	0.35± 0.15
RTT12	**1210**	3.05± 0.10	2.55± 0.10	0.55± 0.10	0.50± 0.20	0.50± 0.20
RTT20	**2010**	5.00± 0.20	2.50± 0.20	0.55± 0.10	0.60± 0.20	0.60± 0.20
RTT25	**2512**	6.30± 0.20	3.20± 0.20	0.55± 0.10	0.60± 0.20	0.60± 0.20

6 :

6.1 *(Electrical Performance Test)*

ITEM	Conditions	Specifications	
		Resistors	Jumper
Temperature Coefficient of Resistance	TCR ppm / $\frac{R2 \quad R1}{R1 \quad T2 \quad T1} \times 10^6$ R1: (Ω) R2:-55 +125 (Ω) T1: ( ) T2:-55 +125 ( ) JIS-C5201-1 4.8	3.	NA
Short Time Overload	2.5 5 30 (3.) Jumper: : JIS-C5201-1 4.13	1. : 1Ω 0.1% 0.5% 1%:± (1.0% 0.05Ω) 2% 5%:± (2.0% 0.10Ω) 2. : 1Ω 1% 2% 5% :± (2.0% 0.001Ω)	3.
Insulation Resistance	100 VDC ( ) JIS-C5201-1 4.6  	10^9Ω	
Dielectric Withstand Voltage	VAC ( ) RTT05 06 12 20 25 500 VAC RTT01 02 03 300 VAC JIS-C5201-1 4.7		
Intermittent Overload	2.5 1 ON 25 OFF $10{,}000^{+400}_{-0}$ 60 Jumper: : JIS-C5201-1 4.13	1. : 1Ω ± (5.0% 0.10Ω) 2. : 1Ω ± (5.0% 0.001Ω)	3.
Noise Level	JIS-C5201-1 4.12		NA

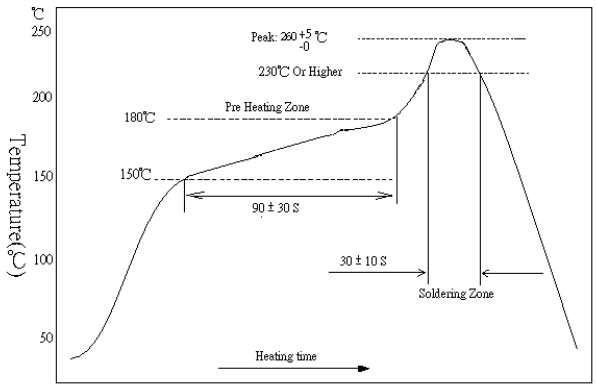
Jumper	RTT01 (0201)	RTT02 (0402)	RTT03 (0603)	RTT05 (0805)	RTT06 (1206)	RTT12 (1210)	RTT20 (2010)	RTT25 (2512)
± 5%	1.25A	2.5A	2.5A	5A	5A	5A	5A	5A
± 1%	1.25A	3.75A	5A	6.25A	8.75A	10A	12.5A	17.5A

(Resistance)	(Noise)
R 100Ω	-10db(0.32 uV/V)
100Ω R 1KΩ	0db(1.0 uV/V)
1KΩ R 10KΩ	10db(3.2 uV/V)
10KΩ R 100KΩ	15db(5.6 uV/V)
100KΩ R 1MΩ	20db(10 uV/V)
1MΩ R	30db(32 uV/V)

ITEM	Conditions	Specifications	
		Resistors	Jumper

1		
2		125 24
3		85 85% 168
4	Reflow(1)	Reflow Table1
5		85 65% 24
6	Reflow(2)	Reflow Table2
7		

1.Reflow



2.

Table 1 (1)

: 230		
30	240	150 160

Table 2 (2)

220	90	150 160
230	60	
240	5	
	245	

( ):

30 70%

2

PCT 105 ( ).
100% 1.22× 10^5 pa 4 1. : 1Ω
2 R%=± (1.0%+0.05Ω)
( ): 2. : 1Ω
R%=± (1.0%+0.001Ω)

R0.5 (0201:R0.1)
10 sec ( ).
:
1.RTT02=10N ( ).
2. =20N 1. : 1Ω
3.RTT01:5N R%=± (1.0%+0.05Ω)
2. : 1Ω
R%=± (1.0%+0.001Ω)

( ).

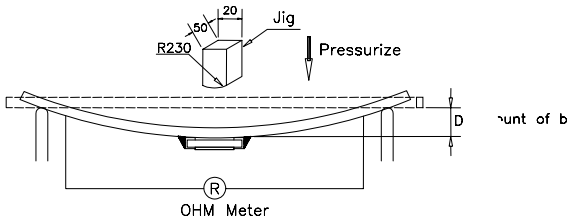
:
1. :

50%
2. :

50%

JIS-C5201-1 4.32

3.



JIS-C5201-1 4.33

Leaching

260± 5 30+1/-0

SONY (SS-00254-9)

Vibration

:10 Hz ~ 55 Hz ~ 10 Hz/
:1.5 mm
:6 hr (X.Y.Z3 2 hr)
JIS-C5201-1 4.22

1. 95%
2. ( )

3.

1. : 1 Ω
0.1% 0.5% 1%:± (0.5%+0.05Ω)
2% 5%:± (1.0% 0.05Ω)
2. :<1 Ω
1% 2% 5%:± (1.0% 0.001Ω)

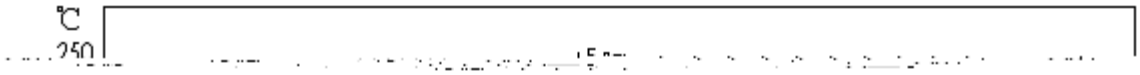
6.3 *(Environmental Test)*

ITEM	Conditions	Specifications	
		Resistors	Jumper
Resistance to Dry Heat	155± 5 1000+48/-0 hr 1 hr PS:RTT01 125± 3 JIS-C5201-1 4.25	1. : 1Ω 0.1% 0.5% 1%:± (1.0% 0.05Ω) 2% 5%:± (2.0% 0.10Ω) 2. : 1Ω 1% 2% 5% :± (1.0% 0.001Ω)	3.
Thermal Shock	-55 15 +125 15 300 60 -55± 5 125± 5 15 MIL-STD 202 Method 107	1. : 1Ω 0.1% 0.5% 1%:± (0.5% 0.05Ω) 2% 5%:± (1.0% 0.05Ω) 2. : 1Ω 1% 2% 5% :± (1.0% 0.001Ω)	3.
Loading Life in Moisture	40± 2 90~95% 90 ON 30 OFF 1,000 hr 60 JIS-C5201-1 4.24	1. : 1Ω RTT01 1%:± (1.0%+0.05Ω) 0.1% 0.5% 1%:± (0.5%+0.05Ω) 5%:± (3.0%+0.1Ω) 2% 5%:± (2.0%+0.10Ω) 2. : 1Ω 1% 2% 5% :± (2.0% 0.001Ω)	3.
Load Life	70± 2 90 ON 30 OFF 1,000 hr 60 JIS-C5201-1 4.25	1. : 1Ω RTT01 1%:± (1.0%+0.05Ω) 0.1% 0.5% 1%:± (0.5%+0.05Ω) 5%:± (3.0%+0.1Ω) 2% 5%:± (2.0%+0.10Ω) 2. : 1Ω 1% 2% 5% :± (2.0% 0.001Ω)	3.
Low Temperature Operation	-55 60 45 15 8± 1 hr MIL-R-55342D 4.7.4	1. : 1Ω 0.1% 0.5% 1%:± (0.5% 0.05Ω) 2% 5%:± (1.0% 0.05Ω) 2. : 1Ω 1% 2% 5% :± (1.0% 0.001Ω)	3.
Whisker	: ( ): 2 Table 1 -40± 2 85± 2 7 1,500 ( ): 2 Table 2 85 85% RH 500± 4	Whisker 50 μ m	

ITEM	Conditions	Specifications	
		Resistors	Jumper
	40 40 (SEM) 1000 1000 SONY (SS-00254-8)		

7 :

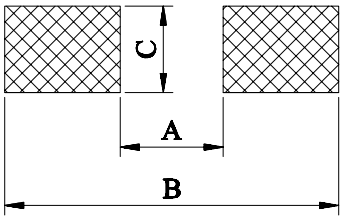
7.1 Lead Free Reflow Soldering Profile



: 260 +5/-0 ,10

7.2 :350± 10 3

8 Land Pattern Design (For Reflow Soldering)



Unit : mm

DIM / TYPE	A	B	C
RTT01	0.3	1.0	0.4
RTT02	0.5	1.5	0.6
RTT03	0.8	2.1	0.9
RTT05	1.2	3.0	1.3
RTT06	2.2	4.2	1.6
RTT12	2.2	4.2	2.8
RTT20	3.5	6.1	2.8
RTT25	3.8	8.0	3.5

9 :

9.1 : 1Ω

9.1.1 RTT03 05 06 12 20 25 ± 2% ± 5% :

9.1.1.1 10Ω: E-24 (10^X)

→100

100=10 x10^0=10Ω

9.1.1.2 10Ω: E-24 (10^{-1})

→4R7

4R7=47 x10^{-1}=4.7Ω

9.1.2 RTT05 06 12 20 25 ± 0.1% ± 0.5% ± 1% :

9.1.2.1 100Ω: E-24 E-96

(10^X)

→1002

1002=100 x10^2=10000Ω=10KΩ

9.1.2.2 100Ω: E-24 E-96 R (10^X)

→10R2 R (10^{-1})

10R2=102 x10^{-1}=10.2Ω

→1R02 R (10^{-2})

1R02=102 x10^{-2}=1.02Ω

9.1.3 RTT03 ± 0.1% ± 0.5% ± 1% ( ):
E-96 EIAJ
(10^X)

→47B
47B 301× 10^1 3010Ω 3.01KΩ

E-96 E24 , E-24

100Ω: 391 391=39 x10^1=390Ω
100Ω: 390 390=39 x10^0=39Ω

9.2 : 1Ω
9.2.1 RTT05 06 12 20 25 ± 1% ± 2% ± 5% :
9.2.1.1 100 mΩ: E-24 E-96
(10^{-3})

→R220 (E-24)
R220 220 × 10^{-3} 0.22 Ω 220 mΩ
→R102 (E-96)
R102 102 × 10^{-3} 0.102 Ω 102 mΩ

9.2.1.2 100 mΩ: E-24
(10^{-3})

→R022
R022 22 × 10^{-3} 0.022 Ω 22 mΩ

9.2.2 RTT03 ± 1% ± 2% ± 5% :
9.2.2.1 100 mΩ: E-24
(10^{-2})

→R22
R22 22 × 10^{-2} 0.22 Ω 220 mΩ

9.2.2.2 100 mΩ: E-24
(10^{-3})

→022
022 22 × 10^{-3} 0.022 Ω 22 mΩ

9.3 RTT 0R:
" 0 "

9.4 RTT01 RTT02

9.5

9.5.1 E-24

9.6

Marking / Type	A	B	C	D	E	F	X	Y			

[redacted]

10 :

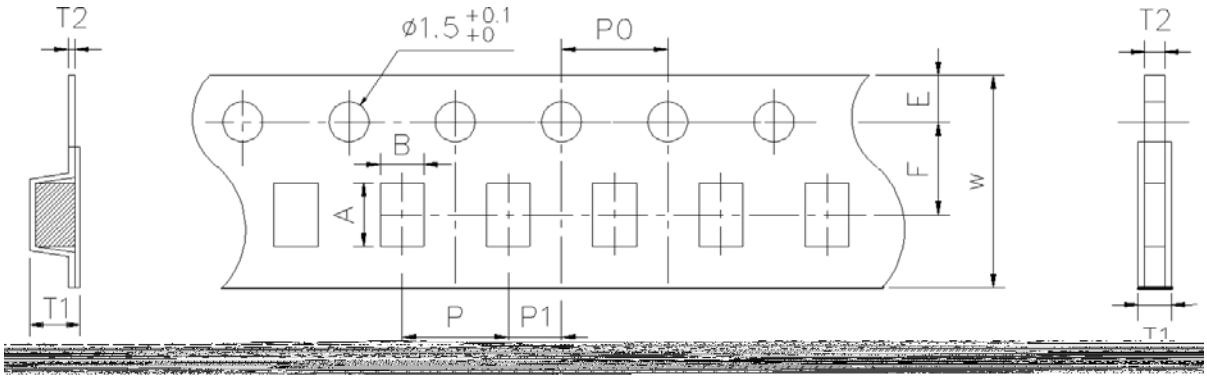
10.1 : 1 μ

10.2 : 3 μ

10.3

11 :

11.1 (Tape Dimensions):



Unit : mm

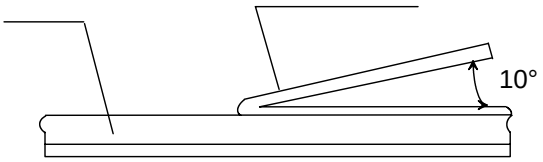
(TP) Paper	RTT03	1.80± 0.1	1.00± 0.1	8.0± 0.2	1.75± 0.1	3.5± 0.05	0.60+0.2/-0	0.60± 0.1	4.0± 0.1	4.0± 0.05	40.0± 0.20	2.0± 0.05
	RTT05	2.30± 0.1	1.55± 0.1	8.0± 0.2	1.75± 0.1	3.5± 0.05	0.75+0.2/-0	0.75± 0.1	4.0± 0.1	4.0± 0.05	40.0± 0.20	2.0± 0.05
		3.50± 0.2	1.90± 0.2	8.0± 0.2	1.75± 0.1	3.5± 0.05	0.75+0.2/-0	0.75± 0.1	4.0± 0.1	4.0± 0.05	40.0± 0.20	2.0± 0.05
± 0.2	RTT12	3.50± 0.2	2.80± 0.2	8.0± 0.2	1.75± 0.1	3.5± 0.05	0.75+0.2/-0	0.75± 0.1	4.0± 0.1	4.0± 0.05	40.0± 0.20	2.0± 0.05
	RTT20	5.50± 0.2	2.80± 0.2	12.0± 0.2	1.75± 0.1	5.5± 0.05	0.75+0.2/-0	0.75± 0.1	4.0± 0.1	4.0± 0.05	40.0± 0.20	2.0± 0.05
(TE) Embossed	RTT20	5.50± 0.2	2.80± 0.2	12.0± 0.2	1.75± 0.1	5.5± 0.05	0.85± 0.15	0.23± 0.15	4.0± 0.1	4.0± 0.05	40.0± 0.20	2.0± 0.05
	RTT25	6.70± 0.2	3.40± 0.2	12.0± 0.2	1.75± 0.1	5.5± 0.05	0.85± 0.15	0.23± 0.15	4.0± 0.1	4.0± 0.05	40.0± 0.20	2.0± 0.05

11.3 (Peel off Strength):

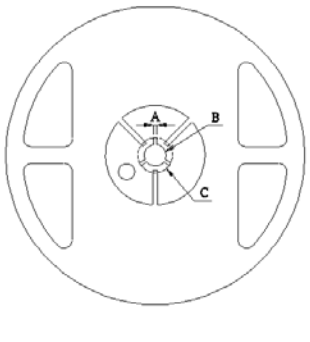
11.3.1 : 0201 => 0.1 ~ 0.7N (10.2 ~ 71.4 gf)

0402 => 0.07 ~ 0.5N (7.1 ~ 51 gf)

0603 0805 1206 1210 2010 2512 => 0.07 ~ 0.7 N (7.1 ~ 71.4 gf)

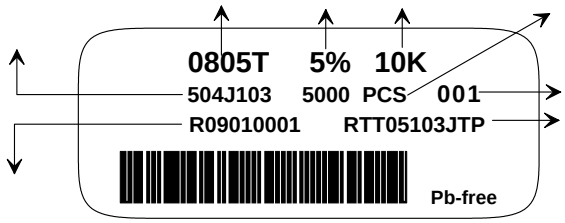


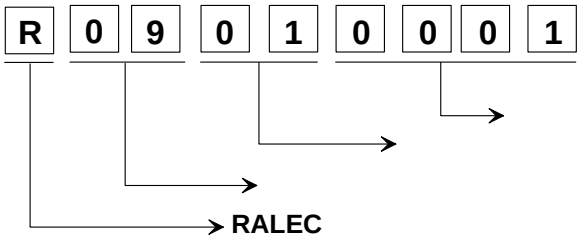
11.5 (Reel Dimensions): Unit : mm



Reel Type/ Tape	Wa	M	A	B	C	D
7" reel for 8 mm tape	9.0 ± 0.5	178 ± 2.0	2.0 ± 0.5	13.5 ± 0.5	21.0 ± 0.5	60.0 ± 1.0
7" reel for 12 mm tape	13.8 ± 0.5	178 ± 2.0				80.0 ± 1.0
10" reel for 8 mm tape	10.0 ± 0.5	254 ± 2.0				100.0 ± 1.0
13" reel for 8 mm tape	10.0 ± 0.5	330 ± 2.0				100.0 ± 1.0

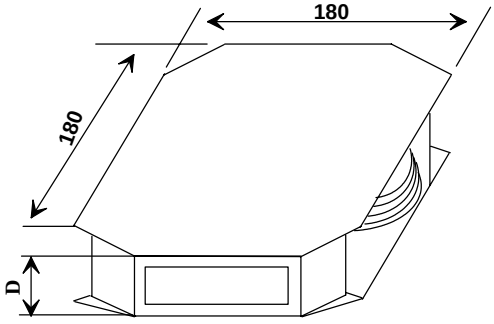
11.6 (Label):



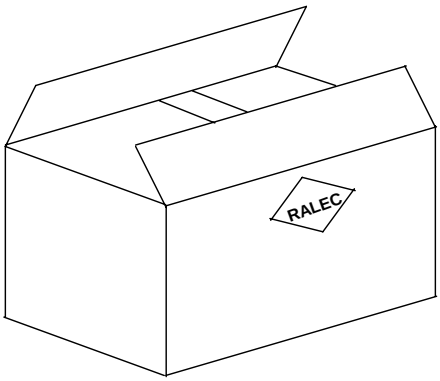


11.7

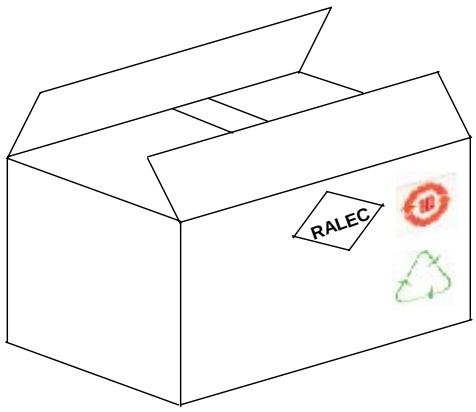
	D (mm)
1	12
2	24
3	36
4	48
5	60
6	72
7	84
8	96
9	108
10	120



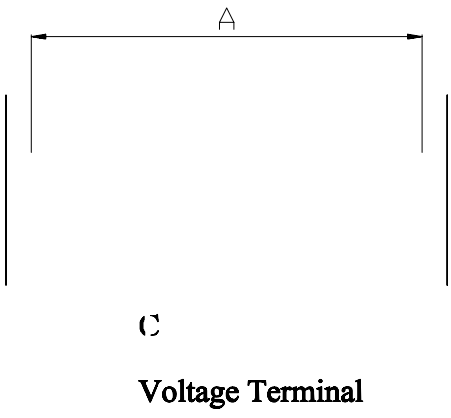
11.8

10R	(mm)	(mm)	(mm)	
2	272	205	210	
4	375	280	210	
8	544	380	210	

11.9

10R	(mm)	(mm)	(mm)	
2	272	205	210	
4	375	280	210	
8	544	380	210	

12



TYPE \ DIM	A	B
RTT01	0.44± 0.05	0.22 ± 0.05
RTT02	0.80± 0.05	0.24 ± 0.05
RTT03	1.35± 0.05	0.35 ± 0.05
RTT05	1.80 ± 0.05	0.35 ± 0.05
RTT06	2.90 ± 0.05	0.35 ± 0.05
RTT12	2.90 ± 0.05	0.35 ± 0.05
RTT20	4.50 ± 0.05	1.15 ± 0.05
RTT25	5.90 ± 0.05	1.60 ± 0.05

13

13.1 25± 5 60± 15%

14 :( )

15 RoHS

RoHS (2002/95/EC)

15.1 (100ppm)

15.2 (1000ppm)

15.2.1 :

15.2.1.1

15.2.1.2

15.3 (100ppm)

15.4 (100ppm)

15.5 (PBB) (100ppm)

15.6 (PBDE) (100ppm)

16

16.1 (QA-QR-027)